

ABSTRACT

A system and method for determining the location of a source (target device) of a wireless radio signal of an unknown or arbitrary type for which a signal correlator is not known or available. The target device's signal is received at a plurality of known locations to generate receive sample data representative thereof at each known location. Receive signal data samples associated with the target device's signal at one of the plurality of known locations is selected to be used as a reference waveform. For example, information concerning the target device's signal received at each known location is compared to determine the known location that best receives it. The receive signal sample data obtained by the known location that best receives the target device's signal is used as the reference waveform. A measurement experiment is run in which the target device's signal is followed or preceded relatively close in time by a transmission of a reference signal. The reference signal and the target device's signal are received at the plurality of known locations. The reference waveform is used to correlate against the received signal data obtained at each known location to determine the time of arrival of the target device's signal. The time difference between arrival of the target device's signal and arrival of the reference signal at each of the known locations is computed. A location of the source of the wireless radio signal is computed based on the time difference of arrival measurements at the plurality of known locations.